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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,724	03/21/2001	Charles E. Larson	4360US (99-890)	3328

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TRASK BRITT
P.O. BOX 2550
SALT LAKE CITY, UT 84110

EXAMINER

TOLEDO, FERNANDO L

ART UNIT PAPER NUMBER

2823

DATE MAILED: 12/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/813,724

Applicant(s)

LARSON, CHARLES E.

Examiner

Fernando Toledo

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2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 27-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1 – 15 and 27 – 30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.
2. Applicant's election without traverse of claims 16 – 26 in Paper No. 6 is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 16 – 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. (U. S. patent 6,444,921 B1).

In re claim 16, Wang in the U. S. patent 6,444,921 B1; figures 1 – 20B discloses providing a substrate 5; providing a flexible interposer 30 including a first surface having several electrical contacts 14 and 24 for electrically connecting at least one semiconductor die to a substrate, a second surface and several of vias extending through the flexible interposer from the first surface to the second surface (Figure 3);

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providing at least one semiconductor die having several of bond pads on a first surface thereof; attaching the at least one semiconductor die to the flexible interposer forming an intermediate structure, the interposer being folded around the at least one semiconductor die, the at least one semiconductor die being in electrical communication with the substrate through the flexible interposer; and attaching the intermediate structure to the substrate (Figure 1).

In re claim 17, Wang teaches wherein the vias are filled with conductive metal (column 5).

In re claim 18, Wang teaches wherein the second surface surrounds at least three sides of the at least one semiconductor die around which said interposer is folded (Figure 1).

In re claim 19, Wang teaches wherein the second surface of the interposer surrounds at least two sides of the at least one semiconductor die around which the interposer is folded (Figure 1).

In re claim 20, Wang teaches wherein the bond pads are in electrical communication with the electrical contacts through the vias in the flexible interposer (Figure 1).

In re claim 21, Wang teaches wherein the interposer folds around more than two semiconductor die in a serpentine fashion around groups including at most two semiconductor dies therein (Figure 1).

In re claim 22, Wang teaches further including applying electrical contacts to top surface of the a high density semiconductor package to attach semiconductor devices to the package (Figure 1).

In re claim 23, Wang teaches providing at least one semiconductor die having several of bond pads on a surface of the at least one die; providing an interposer including a first surface having several of electrical contacts, a second surface, and several of vias extending through the interposer from the first surface to the second surface; attaching the at least one die to the interposer to form an intermediate packaging structure; providing a substrate; attaching the substrate to the intermediate structure; and connecting between the substrate and the at least one semiconductor die (Figure 1).

In re claim 24, Wang discloses wherein the attaching the at least one die further includes: attaching multiple semiconductor die in groups of two semiconductor die, the semiconductor die having a back-to-back configuration, a back side of one semiconductor die substantially contacting a back side of another semiconductor die of a group (Figure 1).

In re claim 25, Wang discloses wherein the electrical contacts and the bond pads provide electrical communication through the vias of the flexible interposer (Figure 1).

In re claim 26, Wang discloses forming electrical contacts on a top surface of the package to attach semiconductor device components (Figure 1).

Conclusion


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando Toledo whose telephone number is 703-305-0567. The examiner can normally be reached on Mon-Fri 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Fernando Toledo
Examiner
Art Unit 2823

ft
December 11, 2002


Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800